REMARKS

I. Introduction

In response to the Final Office Action dated June 22, 2006, claim 1 has been cancelled. Claims 2-40 remain in the application. Re-examination and re-consideration of the application, as amended, is requested.

II. Petition for Extension

Applicants are submitting herewith a petition for an extension of one month under 37 CFR §1.136(a) with the proper fee under §1.17(a)(1).

III. Request for Continued Examination

Applicants are submitting herewith a Request for Continued Examination (RCE) under 37 CFR §1.114 with the proper fee under §1.17(e).

IV. Cited References and the Present Invention

A. The Gibson Reference

Gibson et al., "File Server Scaling with Network-Attached Secure Disks", ACM June 1997, pages 272-284, discloses by providing direct data transfer between storage and client, network-attached storage devices have the potential to improve scalability for existing distributed file systems (by removing the server as a bottleneck) and bandwidth for new parallel and distributed file systems (through network striping and more efficient data paths). Together, these advantages influence a large enough fraction of the storage market to make commodity network-attached storage feasible. Realizing the technology's full potential requires careful consideration across a wide range of file system, networking and security issues. The paper contrasts two network-attached storage architectures-(1) Networked SCSI disks (NetSCSI) are network-attached storage devices with minimal changes from the familiar SCSI interface, while (2) Network-Attached Secure Disks (NASD) are drives that support independent client access to drive object services. To estimate the potential performance benefits of these architectures, an analytic model is developed and trace-driven replay experiments are performed based on AFS and NFS traces. The results suggest that NetSCSI can reduce file server load during a burst of NFS or AFS activity by about 30% and with the NASD architecture, server load (during burst activity) can be reduced by a factor of up to five for AFS and up to ten for NFS.

B. The Present Invention

The present invention provides a digital data processing system with improved access to information stored on a peripheral device. In one embodiment, the system has a plurality of nodes, a peripheral device, a file system and a bypass mechanism. In this embodiment, a first node (e.g., a client node) is connected to a second node (e.g., a server node) over a first communications pathway (e.g., a network). The second node is itself connected to a peripheral device (e.g., a disk drive) over a second communications pathway. The first node, too, is connected to the peripheral device over a third communications pathway. The file system, executing on the first and second nodes, is capable of responding to access requests generated by the first node for transferring data between that node and the peripheral device, via the second node and via the first and second communications pathways. The file system also maintains administrative information pertaining to storage on the peripheral device of data designated by such requests. That information may include, for example, physical storage location mappings for files and other data stored on the peripheral device. The bypass mechanism, which executes on at least the first node in this embodiment, intercedes in the response to at least selected input/output or access requests generated by that node. The bypass transfers data designated by such requests between the first node and the peripheral device over the third communications pathway, in lieu of transferring that data via the second node and the first and second communications pathways. Such transfers by the bypass, however, are made using the administrative information maintained by the file system relating to storage of such data on the peripheral device.

V. Office Action Prior Art Rejections

In sections (1)-(3), the Office Action rejected claims 1-40 under 35 U.S.C. 102(a) as being anticipated by Gibson. Respecting independent claims 2, 3, 4, 16, 19, 20 and 28, the Office Action has essentially reasserted a collection of passages from Gibson teach the all the elements of all the present independent claims.

Applicants respectfully disagree and traverse the rejections for the reasons set out below.

a. Gibson Does Not Teach or Suggest a Bypass

Contrary to the assertion in the Office Action, Gibson not teach or suggest a bypass, interceding in response to the request for access applied thereby to the node that controls such access as presently claimed, e.g. in claim 2. The Office Action asserts that Gibson teaches "a command interface decides which of the access requests should go through the file manager (i.e. the

first and the second path) and which of the requests should go directly to the files in the disk (i.e. the third path)." In addition, the Office Action invokes a dictionary to define "bypasses" as a "deflected route" which it asserts is performed by the command interface. However, Gibson does not teach a command interface that "decides which of the access requests should go through the file manager" and Gibson does not teach a deflected route of the access requests as asserted by the Office Action.

First, regarding the Gibson's teaching of a "command interface", the term is used only three times. The first two times it is used in the phrases "drive command interface" (see page 274, section 3 intro, last sentence) and "disk's command interface" (see page 275, Figure 2 description) within the description of NetSCSI immediately preceding it's third use (where it is quoted by the Office Action) within the description of NASD in the passage:

> With network-attached secure disks, we relax the constraint of minimal change from the existing SCSI interface and implementation. Instead we focus on selecting a command interface that reduces the number of client-storage interactions that must be relayed through the file manager, offloading more of the file manager's work without integrating file system policy into the disk. (See page 275, Section 3.4, first paragraph.)

Noting the context of the other prior uses of "command interface" and the overall discussion, Applicants respectfully submit that Gibson is identifying the command interface for the drives within the NASD architecture being discussed. However, Gibson does not teach or suggest a particular function performed by that command interface (i.e. deciding which requests go through the file manager or go directly to the disks). Gibson only requires that it possess a quality which reduces the number of direct client-storage interactions that must be relayed through the file manager. In any case, nowhere does Gibson teach or suggest a command interface functioning as asserted by the Office Action and performing a bypass as presently claimed.

Regarding the NASD architecture Gibson does go on to teach one example access sequence (presumably compatible with the drive command interface) for reducing the number of client-storage interactions that must be relayed through the file manager in which access is first granted by the file manager and then made directly to the NASD drives:

> As an example of a possible NASD access sequence, consider a file read operation depicted in Figure 3. Before issuing its first read of a file, the client authenticates itself with the file manager and requests access to the file. If access is granted, the client receives the network location of the NASD drive containing the object and a time-limited capability to access the object and for establishing a secure communications channel with the drive. After this point, the client may directly request access to data on NASD drives, using the appropriate capability. [emphasis added] (See page 276, first full paragraph and FIG. 3.)

Thus, Applicants respectfully submit that Gibson teaches an NASD architecture where accesses are made directly to the drives, not bypassed to the drives. Gibson does not teach or suggest a "command interface" or any other system employing a bypass (or "deflected route"), interceding in response to the request for access applied thereby to the node that controls such access as presently claimed. Moreover, Applicants submit that Gibson teaches away from such a bypass because Gibson explicitly teaches that the client directly request access to data on the NASD drives after authenticating with the server.

Applicants further note that the contrasted architecture of NetSCSI described by Gibson in Section 3.3 also does not teach the present invention as claimed. In this case, Gibson teaches that the file manager "processes the request from a client in the usual way." See page 275, Figure 2 inset. Thus, although the file manager is eliminated from the data path, the file manager still receives and processes the access requests from the clients to the peripheral device. Accordingly, here also Gibson does not teach a bypass interceding in response to an access request applied thereby to the file system as presently claimed. Moreover, Applicants submit that Gibson teaches away from such a bypass by teaching the objective (with respect to NetSCSI) to "retain as much as possible of SCSI, the current dominant mid- and high-level storage device protocol" and defines "NetSCSI is a network-attached storage architecture that makes minimal changes to the hardware and software of SCSI disks. See page 274, Section 3.2, first paragraph.

b. Gibson Does Not Teach or Suggest Data Transfer Over A Communications Pathway That Does Not Include a Node That Controls Such Access

In addition to not teaching or suggesting a bypass as presently claimed, Gibson also does not teach "initiating transfer of data designated by that request over a communications pathway that does not include a node that controls such access", e.g. as claimed in independent claim 2 (which is similarly claimed in independent claims 3, 4, 16 and 28).

In both the NetSCSI and NASD architectures described by Gibson, there is no communications pathway between a client and a drive to be accessed that does not also include the file manager. The NetSCSI architecture shown in FIG. 2 and described in Section 3.3 shows a client connected to the disks via a communications pathway (the local area network) that also includes the file manager. Similarly, the NASD architecture shown in FIG. 3 and described in Section 3.4 shows a client connected to the disk via single communications pathway (the local area network) that also includes the file manager. Thus, Gibson teaches only initiating a transfer of data designated by a request over a communications pathway that does include a node that controls such access, not one

that does not as presently claimed. Moreover, Gibson does not show any communications pathway between the client and the disk that does not also include the file manager.

VI. Conclusion

A proper §102 rejection requires that each and every element of the claimed invention is taught by the cited reference. However, Gibson does not teach or suggest the bypassing (or intercepting) of an access request to a file manager (or second node) as presently claimed in each of the independent claims 2-4, 16, 19 and 28. In addition, Gibson also does not teach or suggest initiating transfer of data designated by a request over a communications pathway that does not include a node (or file manager) that controls such access as presently claimed in independent claims 2-4, 16 and 28. Accordingly, Applicants respectfully submit the present rejection of the independent claims under 35 U.S.C. § 102(a) is improper. Withdrawal of the rejections is respectfully solicited.

Further, Applicants submit that dependent claims 5-15, 17, 18, 20-27 and 29-40 are allowable over Gibson in the same manner because they recite all the limitations of their respective independent claims. In addition, dependent claims 5-15, 17, 18, 20-27 and 29-40 recite further novel features not taught or suggested by Gibson. Accordingly, withdrawal of the rejections and allowance of dependent claims 5-15, 17, 18, 20-27 and 29-40 is respectfully solicited.

In view of the foregoing, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited. Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

Respectfully submitted,

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